

WHAT IS CLAIMED IS:

1. A system for recording and/or reproducing  
broadcasting programs received or programmed to be  
received, comprising:

5        program sorting means for sorting said broadcasting  
programs into categories according to a predetermined  
rule;

10        program recording means for recording said  
broadcasting programs or programming a recording schedule  
thereof;

15        virtual channel management means for assigning  
virtual channels every category, while setting said  
broadcasting programs, sorted into said categories, in  
array on an associated virtual channel in a reproduction  
start order;

      user operation means for accepting user-based  
channel select operation and/or program search operation  
on said virtual channels; and

20        program presentation means for taking out a  
corresponding broadcasting program for reproduction from  
a selected channel in response to user operations  
accepted through said user operation means.

25        2. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein an  
entry of the categories of said virtual channels is made  
according to user profiles and/or user instructions.

30        3. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
virtual channels include a virtual channel for array of

programs, which are not included in any category for the failure to set an associated category by the user.

4. A system for recording and/or reproducing

5 broadcasting programs according to claim 1, wherein said program sorting means is to sort said broadcasting programs into categories according to EPG (Electronic Programming Guide) and/or user instructions.

10 5. A system for recording and/or reproducing

broadcasting programs according to claim 1, wherein the reproduction start order of the programs on the virtual channels is in conformity with a priority established in accordance with at least one of an on-the-air program order, user profiles and user instructions.

6. A system for recording and/or reproducing

broadcasting programs according to claim 1, wherein said virtual channel management means is to shift reproduction start positions on the virtual channels in the process of being selected and non-selected with the lapse of real time.

7. A system for recording and/or reproducing

25 broadcasting programs according to claim 1, wherein said user operation means is to accept program search operations including pause, fast forward and rewind of reproduction positions on the virtual channels.

30 8. A system for recording and/or reproducing

broadcasting programs according to claim 1, wherein said

user operation means is to accept operations of specifying a broadcasting program preservative status, inclusively of deletion, preservation and reservation (for later watching) relating to specific programs on the  
5 virtual channels.

9. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said virtual channel management means is to manage the  
10 preservative status of the programs set in array on the virtual channels as well.

10. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said  
15 virtual channel management means is to identify each program set in array on the virtual channels as one watched by the user or not.

11. A system for recording and/or reproducing  
20 broadcasting programs according to claim 1, wherein said virtual channel management means is to locate the programs on the virtual channels according to a specified preservative status with respect to each of the recorded programs.

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12. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said virtual channel management means is to locate a program, identified as one watched, in a period of a near past on  
30 a time base on the associated virtual channel.

13. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
virtual channel management means is to locate a program,  
identified as one programmed to be deleted, in a period  
5 of a remote past on a time base on the associated virtual  
channel.

14. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
10 virtual channel management means is to locate a program,  
identified as one preserved, in a period of a slightly  
remote past on a time base on the associated virtual  
channel.

15. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
virtual channel management means is to locate a program,  
identified as one programmed to be recorded, in a period  
of a future (provided that a point on and after a  
20 broadcasting date is required) on a time base on the  
associated virtual channel.

16. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
25 virtual channel management means is to locate a program,  
identified as one remaining recorded without being  
watched (reproduced) yet, in a period of a future spare  
time on the associated virtual channel.

30 17. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said

virtual channel management means is to locate a program, identified as one in process of reservation, in a period of a future spare time on the associated virtual channel preferentially.

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18. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said virtual channel management means is to locate already located programs in overlap array when a period of a  
10 future spare time is not filled with the programs.

19. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said virtual channel management means is to display scheduling  
15 of programs on each virtual channel and a watching status and a preservative status of each program in a form of being identified at a glance.

20. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said  
20 virtual channel management means is to locate a series of programs on a same virtual channel continuously.

21. A system for recording and/or reproducing broadcasting programs according to claim 1, wherein said  
25 virtual channel management means is to shift a reproduction start position on the virtual channel in a process of being selected to a period of a future or a past on a time base in response to fast forward or rewind  
30 instructions supplied through said user operation means.

22. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
virtual channel management means permits no fast forward  
operation for a program corresponding to one earlier than  
5 a broadcasting date.

23. A system for recording and/or reproducing  
broadcasting programs according to claim 1, wherein said  
virtual channel management means is to shift a  
10 reproduction start position on the virtual channel in a  
process of being selected to a period of a future or a  
past on a time base in response to fast forward or rewind  
instructions supplied through said user operation means,  
while setting a reproduction start position on the  
15 virtual channel in a process of being non-selected to  
follow the lapse of real time.

24. A system for recording and/or reproducing  
broadcasting programs according to claim 1, further  
20 comprising real channel management means for assigning  
real channels to broadcasting programs on the air,  
wherein said program presentation means is to take out  
the recorded program for reproduction from the virtual  
channel selected through said user operation means in  
25 response to the selection of said virtual channel, while  
presenting the on-the-air program on the real channel  
selected through said user operation means in response to  
the selection of said real channel.

30 25. A system for recording and/or reproducing  
broadcasting programs according to claim 24, wherein said

user operation means is to accept a channel select operation requiring no distinction between the real channels and the virtual channels.

5 26. A system for recording and/or reproducing broadcasting programs according to claim 1, further comprising "To Watch list" management means for managing reproduction information or the like relating to programs paused on each virtual channel.

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27. A system for recording and/or reproducing broadcasting programs according to claim 26, wherein said "To Watch list" management means is to display a list of paused programs for accepting the user selection on the  
15 list, and also to start reproduction of the corresponding recorded program in response to the user selection.

28. A method of recording and/or reproducing broadcasting programs received or programmed to be  
20 received, comprising:

a program sorting step of sorting the broadcasting programs into categories according to a predetermined rule;

a program recording step of recording the  
25 broadcasting programs or programming a recording schedule thereof;

a virtual channel management step of assigning virtual channels every category, while setting the broadcasting programs, sorted into the categories, in  
30 array on associated virtual channels in a reproduction start order;

a user operation step of accepting a user-based channel select operation and/or a program search operation on the virtual channels; and

a program presentation step of taking out a  
5 corresponding broadcasting program for reproduction from a selected channel in response to the user operation accepted through said user operation step.

29. A method of recording and/or reproducing  
10 broadcasting programs according to claim 28, wherein an entry of categories of the virtual channels is made according to user profiles and/or user instructions.

30. A method of recording and/or reproducing  
15 broadcasting programs according to claim 28, wherein said virtual channels include a virtual channel for array of programs, which are not included in any category for the failure to set an associated category by the user.

20 31. A method of recording and/or reproducing broadcasting programs according to claim 28, wherein said program sorting step is to sort the broadcasting programs according to EPG (Electronic Programming Guide) and/or user instructions.

25 32. A method of recording and/or reproducing broadcasting programs according to claim 28, wherein the reproduction start order of the programs on the virtual channels is in conformity with a priority established in  
30 accordance with at least one of an on-the-air program order, user profiles and user instructions.



33. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to shift reproduction  
5 start positions on the virtual channels in a process of  
being selected and non-selected in response to the lapse  
of real time.

34. A method of recording and/or reproducing  
10 broadcasting programs according to claim 28, wherein said  
user operation step is to accept program search  
operations including pause, fast forward and rewind of  
reproduction positions on the virtual channels.

35. A method of recording and/or reproducing  
15 broadcasting programs according to claim 28, wherein said  
user operation step is to accept operations of specifying  
a recorded program preservative status, inclusively of  
deletion, preservation and reservation (for later  
20 watching) of specific programs on the virtual channels.

36. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to manage a  
25 preservative status of programs set in array on the  
virtual channels.

37. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
30 virtual channel management step is to identify the  
programs set in array on the virtual channels as one

watched by the user or not.

38. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
5 virtual channel management step is to locate the programs  
on the virtual channels in response to a specified  
preservative status with respect to each of the recorded  
programs.

10 39. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to locate a program,  
identified as one watched, in a period of a near past on  
a time base on the associated virtual channel.

15 40. A method of recording and/or reproducing broadcasting  
programs according to claim 28, wherein said virtual  
channel management step is to locate a program,  
identified as one programmed to be deleted, in a period  
20 of a remote past on the a base on the associated virtual  
channel.

41. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
25 virtual channel management step is to locate a program,  
identified as one preserved, in a period of a slightly  
remote past on a time base on the associated virtual  
channel.

30 42. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said

virtual channel management step is to locate a program,  
identified as one programmed to be recorded, in a period  
of a future (provided that a point on and after a  
broadcasting date is required) on a time base on the  
5 associated virtual channel.

43. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to locate a program,  
10 identified as one remaining recorded without being  
watched (reproduced) yet, in a period of a future spare  
time on the associated virtual channel.

44. A method of recording and/or reproducing  
15 broadcasting programs according to claim 28, wherein said  
virtual channel management step is to locate a program,  
identified as one in process of reservation,  
preferentially in a period of a future spare time on the  
associated virtual channel.

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45. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to locate the already  
located programs in overlap array when a period of future  
25 spare time is not filled with the programs.

46. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to display scheduling  
30 of programs on each virtual channel and a watching status  
and a preservative status of each program in a form of

being identified at a glance.

47. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
5 virtual channel management step is to locate a series of  
programs on a same virtual channel continuously.

48. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
10 virtual channel management step is to shift a  
reproduction start position on the virtual channel in a  
process of being selected to a period of a future or a  
past on a time base in response to fast forward or rewind  
instructions supplied through said user operation means.

15 49. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step permits no fast forward  
operation for a program corresponding to one earlier than  
20 a broadcasting schedule date.

50. A method of recording and/or reproducing  
broadcasting programs according to claim 28, wherein said  
virtual channel management step is to shift a  
25 reproduction start position on the virtual channel in a  
process of being selected to a period of a future or a  
past on a time base in response to fast forward or rewind  
instructions supplied through said user operation means,  
while setting the reproduction start position on the  
30 virtual channel in a process of being non-selected to  
follow the lapse of real time.

51. A method of recording and/or reproducing broadcasting programs according to claim 28, wherein further comprising a real channel management step of assigning real channels to broadcasting programs on the air, said program presentation step is to take out the recorded program for reproduction from the virtual channel selected through said user operation means in response to a selection of said virtual channel, while presenting the on-the-air program on the real channel selected through said user operation means in response to the selection of said real channel.

52. A method of recording and/or reproducing broadcasting programs according to claim 51, wherein said user operation step is to accept a channel select operation requiring no distinction between the real channels and the virtual channels.

53. A method of recording and/or reproducing broadcasting programs according to claim 28, wherein it further comprises a "To Watch list" management step of managing reproduction information or the like relating to paused programs on each virtual channel.

54. A method of recording and/or reproducing broadcasting programs according to claim 53, wherein said "To Watch list" management step is to display a list of paused programs for accepting user selection on said list, and to start the reproduction of the corresponding recorded program in response to the user selection.